Short Editorial

Axillary Intra-Aortic Balloon Pump: From Technical Feasibility to Preserving Functional Capacity

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Short Editoerial related to the article: Percutaneous Axillary Intra-Aortic Balloon Pump Implantation in Patients Hospitalized with Heart Failure: Initial Brazilian Experience

Temporary mechanical circulatory support has become an essential component in the management of advanced heart failure (HF), particularly for patients with progressive hemodynamic deterioration awaiting heart transplantation or other definitive therapies. Although higher-support devices, such as the Impella® and venoarterial extracorporeal membrane oxygenation, have broadened therapeutic options, the intra-aortic balloon pump (IABP) continues to play an important role owing to its widespread availability, lower cost, well-established safety profile, and technical simplicity. These characteristics make it especially valuable in healthcare systems with limited resources, such as Brazil's.[1]

However, the femoral approach—the most commonly used access route—has an important drawback: it severely limits patient mobility. Prolonged bed rest contributes to skeletal muscle loss, frailty, and declining functional capacity, all of which are associated with poorer outcomes following heart transplantation. Preserving mobility has therefore evolved from a rehabilitation goal into a key therapeutic objective in patients with advanced HF. Against this background, the study published in this issue of the Arquivos Brasileiros de Cardiologia reports the first Brazilian experience with percutaneous axillary IABP implantation in hospitalized heart transplant candidates.[2] Even during the initial learning curve, the investigators achieved technical success in every procedure, with a median support duration of 15 days and complication rates comparable to those reported by experienced international centers, demonstrating that the technique can be safely adopted in specialized advanced HF programs.

Beyond establishing the feasibility of the axillary approach, this study highlights an important shift in the goals of mechanical circulatory support. Historically, treatment success has been defined primarily by hemodynamic stabilization or survival until definitive therapy. Increasingly, however, preserving functional capacity is recognized as an equally meaningful endpoint. Maintaining muscle strength, functional independence, and physical conditioning during the waiting period may improve postoperative recovery and has been associated with better outcomes after solid-organ transplantation.[3]

The greatest advantage of the axillary approach is that it allows patients to sit upright, stand, and even ambulate while receiving circulatory support. Maintaining mobility may attenuate the profound physical deconditioning associated with prolonged hospitalization and facilitate postoperative recovery, broadening the therapeutic focus beyond hemodynamic stabilization alone. This concept is supported by emerging evidence. The first systematic review and meta-analysis dedicated to axillary IABP, published in 2026, demonstrated high rates of successful ambulation, favorable bridging to heart transplantation or other definitive therapies, and an overall acceptable safety profile.[4] Although the available evidence is derived predominantly from observational studies, the consistency of findings across multiple centers strengthens the rationale for this strategy. The Brazilian experience aligns closely with these observations.[2,4-7] Device migration occurred at rates similar to those previously reported, whereas major complications—including upper-limb ischemia, stroke, and infection—remained uncommon. Furthermore, approximately half of the patients were successfully bridged to heart transplantation or recovered sufficiently to allow device removal despite the considerable clinical complexity of the study population. From a broader perspective, the adaptation of this strategy to the Brazilian healthcare system deserves particular attention. In a setting where durable ventricular assist devices remain limited by cost and availability, optimizing the use of an accessible and familiar technology has the potential to substantially expand access to advanced circulatory support.[2,5,6,8-12]

Despite these encouraging results, several questions remain unanswered. Like most studies available to date, the Brazilian experience is observational, single-center, and includes a relatively small number of patients.[2,4-7] Whether the axillary approach translates into superior survival, improved functional recovery, or better long-term outcomes compared with conventional femoral access remains uncertain and warrants prospective comparative investigation. Moreover, recent evidence indicates that structured mobilization protocols can also be successfully implemented in carefully selected patients supported with femoral IABP.[9] This finding suggests that at least part of the observed benefit may result not only from the access site itself but also from the expertise of multidisciplinary teams

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and the implementation of structured early rehabilitation programs. The development of devices specifically designed for axillary implantation may further improve procedural safety and facilitate wider adoption of this technique.[7]

Ultimately, the Brazilian experience demonstrates that innovation in advanced HF extends beyond the introduction of new technologies. Equally important is the ability to refine and optimize the use of established therapies. By allowing patients to remain physically active throughout mechanical circulatory support, the axillary approach redefines the role of the IABP—from a device intended solely for hemodynamic stabilization to one that also preserves functional capacity while bridging patients to definitive therapy.

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